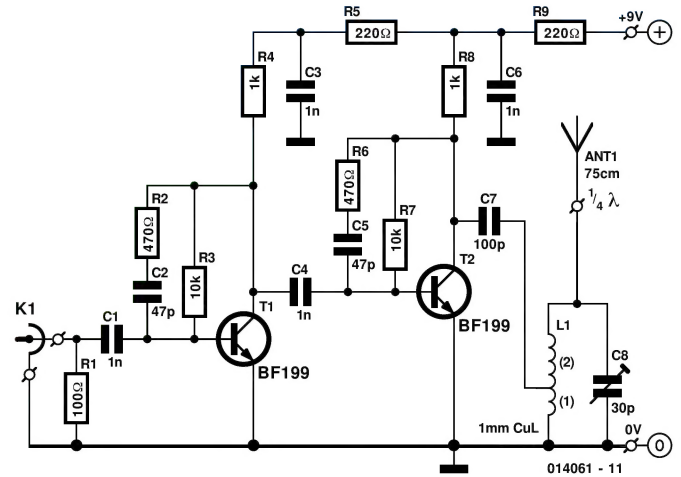
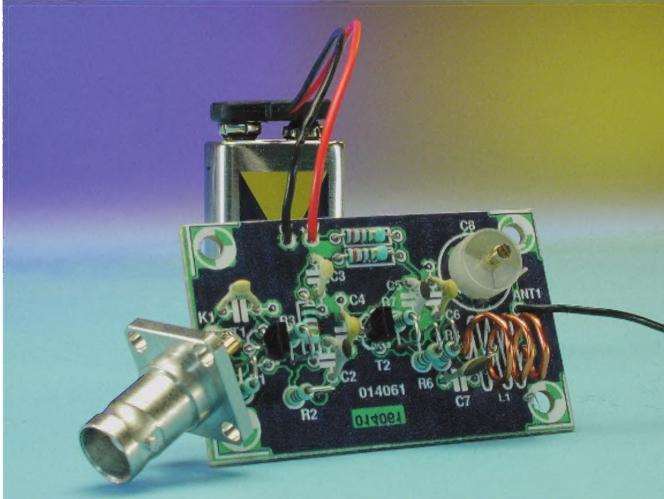


Booster for Cable Radio

029



With the aid of this circuit it is possible to listen, using a portable VHF FM radio, to listen to stations that transmit only your local cable network. Both from its properties and its design this 'cable booster' appears similar to an antenna amplifier, because this is a two-stage amplifier with two common RF transistors type BF199. Only this time, the input is connected to the cable connection instead of an antenna while the output does not contain a coaxial connection but a tuned circuit that acts as impedance matching for a $1/4\lambda$ -antenna. If the circuit is tuned correctly (using trimmer C8), the amplified cable signal is radiated by the vertical antenna and can be easily received by a portable receiver up to three metres away.

It is always possible to build the circuit on a piece of prototyping board, but because an RF-circuit is usually a little more critical it will probably work a lot better if you make use of the PCB layout shown here. During the design, the essential connections have been kept short and the ground plane has been made as large as possible. Capacitor C7 is best directly connected to the tap on L1, as can be seen in the photo. The (air-cored) coil consists of three turns of 1-mm enamelled copper wire (ECW) wound around a pencil (diameter about 8 mm).

During the construction make sure that you keep the connecting wires from the coax connector K1 to the PCB

as short as possible. This prevents the circuit from picking up signals from the air and possibly showing an undesirable tendency to oscillate. The PCB must be fitted in a metal enclosure.

The power supply of the cable booster can either be a 9 V battery or a small, regulated mains power supply. The current consumption amounts to about 2.5 mA.

(014061-1)

COMPONENTS LIST

Resistors:

R1 = 100Ω
R2, R6 = 470Ω
R3, R7 = 10kΩ
R4, R8 = 1kΩ
R5, R9 = 220Ω

Capacitors:

C1, C3, C4, C6 = 1nF
C2, C5 = 47pF
C7 = 100pF
C8 = 30pF trimmer capacitor

Inductors:

L1 = 3 turns 1mm dia. ECW, internal dia. 8mm, tap at 1 turn

Semiconductors:

T1, T2 = BF199

Miscellaneous:

K1 = coax socket, chassis mounting
ANT1 = telescopic or whip antenna, length approx. 75cm
9V battery with holder and wires
Diecast enclosure

